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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/573,810

03/28/2006

Nobuo Miyadera

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EXAMINER

BEDTELYON, JOHN M

ART UNIT

PAPER NUMBER

2874

MAIL DATE

DELIVERY MODE

05/08/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/573,810

Applicant(s)

MIYADERA ET AL.

Examiner

John M. Bedtelyon

Art Unit

2874

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 March 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>03/28/06</u>  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Drawings***

1. At least figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Objections***

2. Claims 1 and 2 are objected to because of the following informalities: "the optical waveguide (a)" appears to refer to the "at least one optical waveguide (a) but it is unclear. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1-18 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to

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which it pertains, or with which it is most nearly connected, to make and/or use the invention. The limitation “an intensity distribution of light entering from at least one optical waveguide (a) out of the incident light waveguide (A) into the multi-mode optical waveguide at a connecting surface of the incident light waveguide (A) and the multi-mode optical waveguide is asymmetric with respect to a geometrical central axis of the optical waveguide (a);” isn’t described in the specification in a way that allows one of ordinary skill in the art to determine what structure is causing this asymmetric intensity distribution.

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. There is no structural element that would cause the intensity distribution of light to be asymmetric, therefore it is interpreted that any identical structures to those claimed could have the asymmetric light intensity distribution.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 2 and 4-18 are rejected under 35 U.S.C. 102(b) as being anticipated by Ido (US Patent 6,236,784, hereinafter Ido).

The claims are rejected out of order and grouped according to which independent claim they depend from.

**With respect to claim 1, Ido teaches:**

A light branching optical waveguide (see figure 11), comprising: at least one incident light waveguide (I) optically connected to one end of a multi-mode optical waveguide (II);

and output light waveguides (III) larger in number than the incident light waveguide (I) optically connected to the other end thereof;

and an extended line of the geometrical central axis of the optical waveguide (I) does not coincide with a geometrical central axis of the multi-mode optical waveguide (II) (see figure 11).

The limitation the light branching optical waveguide being characterized in that: an intensity distribution of light entering from at least one optical waveguide (I) out of the incident light waveguide (I) into the multi-mode optical waveguide (II) at a connecting surface of the incident light waveguide (I) and the multi-mode optical waveguide (II) is asymmetric with respect to a geometrical central axis of the optical waveguide (I), is a method limitation in an apparatus claim, and since Ido teaches a structure that is identical to the claimed structure it would perform the same way if the same method was applied.

**With respect to claim 4**, the limitation "A light branching optical waveguide according to claim 1, characterized in that an optical central axis having a peak intensity in the intensity distribution of light entering into the multi-mode optical waveguide (II) from the optical waveguide (I) substantially coincides with the geometrical central axis of the multi-mode optical waveguide," is a method limitation in an apparatus claim, and since Ido teaches a structure that is identical to the claimed structure it would perform the same way if the same method was applied.

**With respect to claim 7**, Ido teaches:

A light branching optical waveguide according to claim 1, wherein: the incident light waveguide (I) comprises one incident light waveguide;

the output light waveguides (III) comprise two or more output light waveguides;  
(see figure 11)

With respect to the limitation "and a branching ratio between quantities of light branched into the two or more respective output light waveguides is substantially equal," the patentability of an apparatus depends only on the claimed structural limitations. Ido teaches a structure that is substantially identical to that of the claimed invention, therefore the claimed properties or functions are presumed to be inherent. The burden is on the applicant to show that the Ido device does not possess these functional characteristics. See MPEP 2112.01.

**With respect to claim 8**, Ido teaches:

A light branching optical waveguide according to claim 1, wherein at least one of the incident light waveguide (I) or the output light waveguides (III) comprises a single-

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mode optical waveguide (column 18, lines 21-23, while this section discusses the method of creating the structure of figure 9a, column 6, lines 49-53 states the methods can be applied to make any of the embodiments discussed).

**With respect to claims 9 and 10, Ido teaches:**

wherein at least one of the core or a clad constituting the multi-mode optical waveguide is composed of a polymer partially or entirely and wherein the polymer comprises a polyimide-based resin containing fluorine (column 17, line 62- column 18, line 27).

**With respect to claim 11, Ido teaches:**

An optical device comprising the light branching waveguide according to claim 1 (Abstract, lines 4-5).

**With respect to claim 2, Ido teaches:**

A light branching optical waveguide (see figure 1), comprising: at least one incident light waveguide (I) optically connected to one end of a multi-mode optical waveguide (II);

and output light waveguides (III) larger in number than the incident light waveguide (I) optically connected to the other end thereof (see figure 1)

and a core shape of the multi-mode optical waveguide is asymmetric with respect to a geometrical central axis of the multi-mode optical waveguide (see figure 1).

**With respect to claim 5, Ido teaches:**

Wherein the core shape of the multi-mode optical waveguide has a notch at at least one of its side edges (see figure 1).

**With respect to claim 6**, Ido teaches:

A light branching optical waveguide according to claim 5, wherein: the notch is obtained by cutting out a core of the multi-mode optical waveguide from a side to be connected to the incident light waveguide (I) to a side edge of the core (see figure 1);

and a shape of the notch has a sinusoidal curve ranging from the side to be connected to the incident light waveguide (I) to a side to be connected to the output light waveguides (III) (column 11, lines 51-60, and figure 1).

**With respect to claims 12 and 13**, Ido teaches:

A light branching optical waveguide according to claim 2, characterized in that an optical central axis having a peak intensity in the intensity distribution of light entering into the multi-mode optical waveguide (II) from the optical waveguide (I) substantially coincides with the geometrical central axis of the multi-mode optical waveguide (II);

wherein the core shape of the multi-mode optical waveguide has a notch at at least one of its side edges (see figure 2).

**With respect to claim 14**, Ido teaches:

A light branching optical waveguide according to claim 13, wherein: the notch is obtained by cutting out a core of the multi-mode optical waveguide (II) from a side to be connected to the incident light waveguide (I) to a side edge of the core (see figure 2);



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and a shape of the notch has a sinusoidal curve ranging from the side to be connected to the incident light waveguide (I) to a side to be connected to the output light waveguides (III) (column 11, lines 51-60, and figures 1 and 2).

**With respect to claim 15**, Ido teaches:

A light branching optical waveguide according to claim 2, wherein: the incident light waveguide (I) comprises one incident light waveguide;

the output light waveguides (III) comprise two or more output light waveguides; (see figure 11)

With respect to the limitation "and a branching ratio between quantities of light branched into the two or more respective output light waveguides is substantially equal," the patentability of an apparatus depends only on the claimed structural limitations. Ido teaches a structure that is substantially identical to that of the claimed invention, therefore the claimed properties or functions are presumed to be inherent. The burden is on the applicant to show that the Ido device does not possess these functional characteristics. See MPEP 2112.01.

**With respect to claim 16**, Ido teaches:

A light branching optical waveguide according to claim 2, wherein at least one of the incident light waveguide (I) or the output light waveguides (III) comprises a single-mode optical waveguide (column 18, lines 21-23, while this section discusses the method of creating the structure of figure 9a, column 6, lines 49-53 states the methods can be applied to make any of the embodiments discussed).

**With respect to claim 17**, Ido teaches:

A light branching optical waveguide according to claim 2, wherein at least one of the core or a clad constituting the multi-mode optical waveguide is composed of a polymer partially or entirely (column 17, lines 63-65, while this section discusses the method of creating the structure of figure 9a, column 6, lines 49-53 states the methods can be applied to make any of the embodiments discussed).

**With respect to claim 18, Ido teaches:**

An optical device comprising the light branching waveguide according to claim 2 (Abstract, lines 4-5).

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ido (US Patent 6,236,784, hereinafter Ido).

**With respect to claim 3,**

Ido teaches the limitations of claim 2 as previously stated.

The embodiment used to reject claim 2 does not teach wherein an extended line of the geometrical central axis of the optical waveguide (I) does not coincide with the geometrical central axis of the multi-mode optical waveguide (II).

The embodiment of Ido, Figure 11, teaches wherein an extended line of the geometrical central axis of the optical waveguide (I) does not coincide with the geometrical central axis of the multi-mode optical waveguide (II).

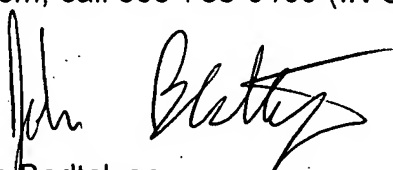
It would have been obvious to one of ordinary skill in the art at the time the invention was made to include in the embodiment of figure 1 with the sine shaped notch in the core of the multi-mode waveguide, the non coincident axis of the optical waveguide (I) and the multi-mode optical waveguide (II) because varying the distance of the axes relative to each other allows for the control of the branching ratio of light (column 7, line 62- column 8, line 18).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John M. Bedtelyon whose telephone number is 571-270-1290. The examiner can normally be reached on Monday - Friday, 7:30am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rodney Bovernick can be reached on 571-272-2344. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
John Bedtelyon

  
**KEVIN WOOD**  
**PRIMARY PATENT EXAMINER**